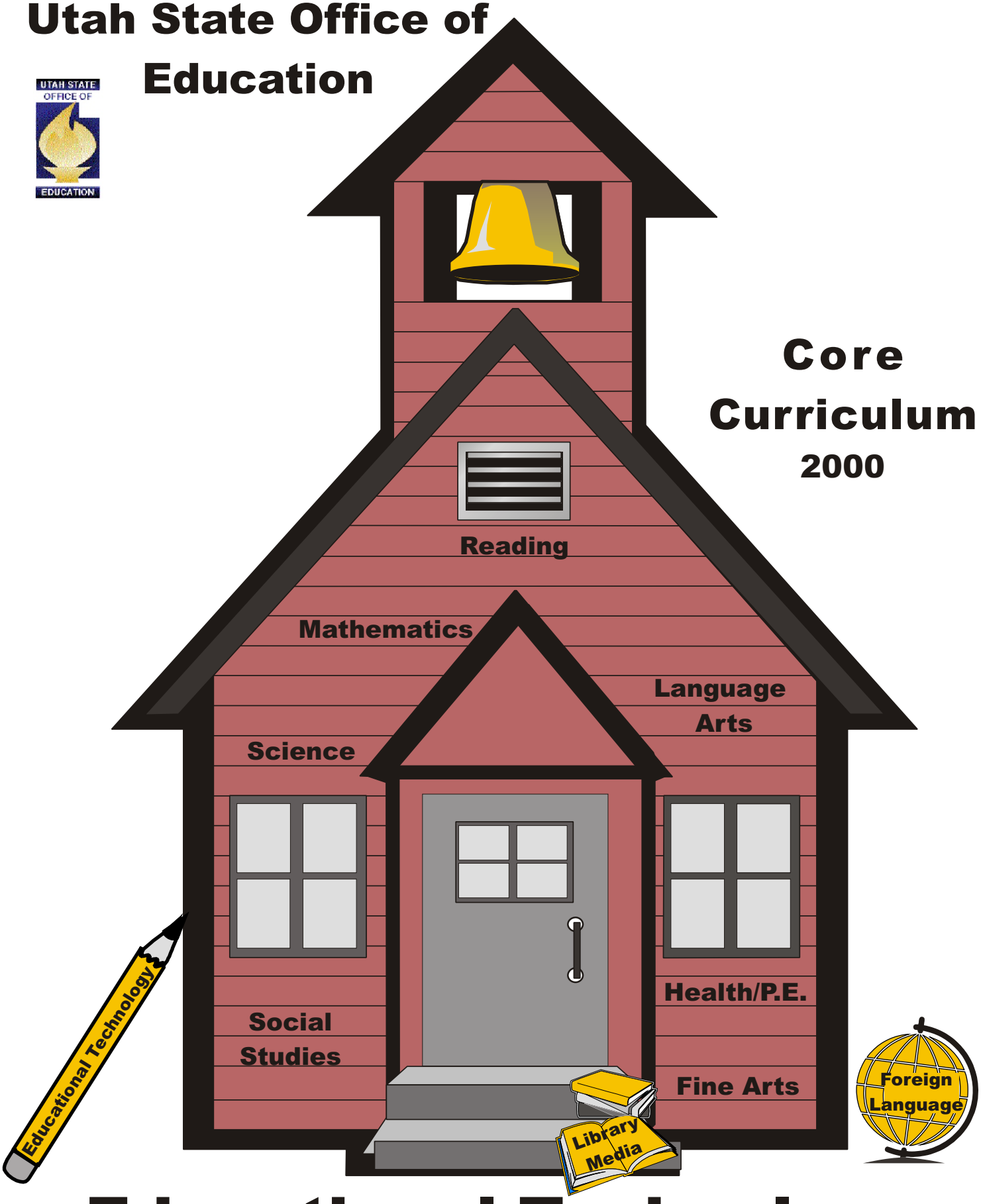
Utah State Office of Education

Core Curriculum 2000



Educational Technology

CORE CURRICULUM

EDUCATIONAL TECHNOLOGY

UTAH STATE OFFICE OF EDUCATION

Patti Harrington
State Superintendent of Public Instruction

Brenda Hales, Associate Superintendent
Student Achievement and School Success

Brett D. Moulding, Director
Curriculum and Instruction

Rick Gaisford, Specialist
Educational Technology

2000

UTAH STATE BOARD OF EDUCATION
250 East 500 South
P. O. Box 144200
Salt Lake City, UT 84114-4200

District 1
Teresa L. Theurer
66 Canterbury Circle
Logan, UT 84321
Phone: (435) 753-0740

District 2
Greg W. Haws
5841 West 4600 South
Hooper, UT 84315
Phone: (801) 985-7980

District 3
Richard Moss
3514 E. Fairway Circ.
Spanish Fork, UT 84660
Phone: (801) 787-1676

District 4
Richard Sadler
875 Edgewood Dr.
Ogden, UT 84403
Phone: (801) 479-7988

District 5
Kim R. Burningham
932 Canyon Crest Drive
Bountiful, UT 84010
Phone: (801) 292-9261

District 6
Michael G. Jensen
4139 S. Aubrey Lane
West Valley City, UT 84128
Phone: (801) 968-5960

District 7
Randall Mackey
1172 E. 100 S.
Salt Lake City, UT 84102
Phone: (801) 575-5000

District 8
Janet A. Cannon
5256 Holladay Blvd.
Salt Lake City, UT 84117
Phone: (801) 272-3516

District 9
Denis Morrill
6024 S. 2200 W.
Taylorsville, UT 84118
Phone: (801) 969-2334

District 10
Laurel Brown
5311 South Lucky Clover Ln
Murray, UT 84123
Phone: (801) 261-4221

District 11
Bill Colbert
14866 Village Vista Dr.
Draper, UT 84020
Phone: (801) 572-1608

District 12
Mark Cluff
645 West Hubbard Cir
Alpine, UT 84004
Phone: (801) 756-7623

District 13
Thomas Gregory
1056 W. 1150 S.
Provo, UT 84601
Phone: (801)607-4702

District 14
Dixie Allen
218 West 5250 North
Vernal, UT 84078
Phone: (435) 789-0534

District 15
Debra G. Roberts
Box 1780
Beaver, UT 84713
Phone: (435) 438-5843

Josh M. Reid
Board of Regents
201 S. Main, Suite 1800
Ogden, UT 84403
Phone: (801) 536-6787

Rosanita Cespedes
Board of Regents
1470 S. 400 E.
Salt Lake City, UT 84115
Phone: (801) 466-7371

Cyndee Miya
Coalition of Minorities Advisory Committee
218 West 5250 North
Vernal, UT 84078
Phone: (435) 789-0534

Patti Harrington
Executive Officer

Twila B. Affleck
Secretary

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INTRODUCTION

Action by the Utah State Board of Education in January 1984 established a policy requiring the identification of specific Core Curriculum standards, which must be completed by all students K-12 as a requisite for graduation from Utah's secondary schools. This action was followed by three years of extensive work involving all levels of the education family in the process of identifying, trial testing, and refining these Core Curriculum standards for Utah's schools.

The Core Curriculum represents those standards of learning that are essential for all students. They are the ideas, concepts, and skills that provide a foundation on which subsequent learning may be built.

The Core should be taught with respect for differences in learning styles, learning rates, and individual capabilities without losing sight of the common goals. Although the Core Curriculum standards are intended to occupy a major part of the school program, they are not the total curriculum of a level or course.

R277. Education, Administration.
R277-700. The Elementary and Secondary School Core Curriculum.
R277-700-1. Definitions.

A. "Accredited" means evaluated and approved under the Standards for Accreditation of the Northwest Association of Schools and Colleges or the accreditation standards of the Board, available from the USOE Accreditation Specialist.

B. "Applied technology education (ATE)" means organized educational programs or courses which directly or indirectly prepare students for employment, or for additional preparation leading to employment, in occupations, where entry requirements generally do not require a baccalaureate or advanced degree.

C. "Basic skills course" means a subject which requires mastery of specific functions and was identified as a course to be assessed under Section 53A-1-602.

D. "Board" means the Utah State Board of Education.

E. "Core Curriculum content standard" means a broad statement of what students enrolled in public schools are expected to know and be able to do at specific grade levels or following completion of identified courses.

F. "Core Curriculum criterion-referenced test (CRTs)" means a test to measure performance against a specific standard. The meaning of the scores is not tied to the performance of other students.

G. "Core Curriculum objective" means a more focused description of what students enrolled in public schools are expected to know and do at the completion of instruction.

H. "Demonstrated competence" means subject mastery as determined by school district standards and review. School district review may include such methods and documentation as: tests, interviews, peer evaluations, writing samples, reports or portfolios.

I. "Elementary school" for purposes of this rule means grades K-6 in whatever kind of school the grade levels exist.

J. "High school" for purposes of this rule means grades 9-12 in whatever kind of school the grade levels exist.

K. "Individualized Education Program (IEP)" means a written statement for a student with a disability that is developed, reviewed, and revised in accordance with the Utah Special Education Rules and Part B of the Individuals with Disabilities Education Act (IDEA).

L. "Middle school" for purposes of this rule means grades 7-8 in whatever kind of school the grade levels exist.

M. "Norm-referenced test" means a test where the scores are based on comparisons with a nationally representative group of students in the same grade. The meaning of the scores is tied specifically to student performance relative to the performance of the students in the norm group under very specific testing conditions.

N. "State core Curriculum (Core Curriculum)" means those standards of learning that are essential for all Utah students, as well as the ideas, concepts, and skills that provide a foundation on which subsequent learning may be built, as established by the Board.

0. "USOE" means the Utah State Office of Education.

P. "Utah Basic Skills Competency Test" means a test to be administered to Utah students beginning in the tenth grade to include at a minimum components on English, language arts, reading and mathematics. Utah students shall satisfy the requirements of the Utah Basic Skills Competency Test in addition to school or district graduation requirements prior to receiving a basic high school diploma.

R277-700-2. Authority and Purpose.

A. This rule is authorized by Article X, Section 3 of the Utah Constitution, which places general control and supervision of the public schools under the Board; Section 53A-l-402(l)(b) and (c) which directs the Board to make rules regarding competency levels, graduation requirements, curriculum, and instruction requirements; Section 53A-1-402.6 which directs the Board to establish a Core Curriculum in consultation with local boards and superintendents and directs local boards to design local programs to help students master the Core Curriculum; and Section 53A-1-401(3) which allows the Board to adopt rules in accordance with its responsibilities.

B. The purpose of this rule is to specify the minimum Core Curriculum requirements for the public schools, to give directions to local boards and school districts about providing the Core Curriculum for the benefit of students, and to establish responsibility for mastery of Core Curriculum requirements.

R277-700-3. Core Curriculum Standards and Objectives.

A. The Board establishes minimum course description standards and objectives for each course in the required

general core, which is commonly referred to as the Core Curriculum.

B. Course descriptions for required and elective courses shall be developed cooperatively by school districts and the USOE with opportunity for public and parental participation in the development process.

C. The descriptions shall contain mastery criteria for the courses, and shall stress mastery of the course material and Core objectives and standards rather than completion of predetermined time allotments for courses.

D. Implementation of the Core Curriculum and student assessment procedures are the responsibility of local boards of education consistent with state law.

E. This rule shall apply to students in the 2005-2006 graduating class.

R277-700-4. Elementary Education Requirements.

A. The Board shall establish a Core Curriculum for elementary schools, grades K-6.

B. Elementary School Education Core Curriculum Content Area Requirements:

(1) Grades K-2:

(a) Reading/Language Arts;

(b) Mathematics;

(c) Integrated Curriculum.

(2) Grades 3-6:

(a) Reading/Language Arts;

(b) Mathematics;

(c) Science;

(d) Social Studies;

(e) Arts:

(i) Visual Arts;

(ii) Music;

(iii) Dance;

(iv) Theatre.

(f) Health Education;

(g) Physical Education;

(h) Educational Technology;

(i) Library Media.

C. It is the responsibility of the local boards of education to provide access to the Core Curriculum to all students.

D. Student mastery of the general Core Curriculum is the responsibility of local boards of education.

E. Informal assessment should occur on a regular basis to ensure continual student progress.

F- Board-approved CRT's shall be used to assess student mastery of the following:

(1) reading;

(2) language arts;

(3) mathematics;

(4) science in elementary grades 4-6; and

(5) effectiveness of written expression.

G. Norm-referenced tests shall be given to all elementary students in grades 3 and 5.

H. Provision for remediation for all elementary students who do not achieve mastery is the responsibility of local boards of education.

R277-700-5. Middle School Education Requirements.

A. The Board shall establish a Core Curriculum for middle school education.

B. Students in grades 7-8 shall earn a minimum of 12 units of credit to be properly prepared for instruction in grades 9-12.

C. Local boards may require additional units of credit.

D. Grades 7-8 Core Curriculum Requirements and units of credit:

(1) General Core (10.5 units of credit):

(a) Language Arts (2.0 units of credit) ;

(b) Mathematics (2.0 units of credit);

(c) Science (1.5 units of credit);

(d) Social Studies (1.5 units of credit);

(e) The Arts (1.0 units of credit):

(i) Visual Arts;

(ii) Music;

(iii) Dance;

(iv) Theatre.

(f) Physical Education (1.0 units of credit);

(g) Health Education (0.5 units of credit);

(h) Applied Technology Education Technology, Life, and Careers (1.0 units of credit);

(i) Educational Technology (credit optional);

(j) Library Media (integrated into subject areas).

E. Board-approved CRT's shall be used to assess student mastery of the following:

(1) reading;

(2) language arts;

(3) mathematics;

(4) science in grades 7 and 8; and

(5) effectiveness of written expression.

F. Norm-referenced tests shall be given to all middle school students in grade 8.

R277-700-6. High School Requirements.

A. The Board shall establish a Core Curriculum for students in grades 9-12.

B. Students in grades 9-12 shall earn a minimum of 24 units of credit.

C. Local boards may require additional units of credit.

D. Grades 9-12 Core Curriculum requirements required units of credit:

(1) Language Arts (3.0 units of credit);

(2) Mathematics (2.0 units of credit):

(a) minimally, Elementary Algebra or Applied Mathematics I; and

(b) geometry or Applied Mathematics II; or

(c) any Advanced Mathematics courses in sequence beyond (a) and (b) ;

(d) high school mathematics credit may not be earned for courses in sequence below (a).

(3) Science (2.0 units of credit from two of the four science areas):

(a) earth science (1.0 units of credit);

(b) biological science (1.0 units of credit);

(c) chemistry (1.0 units of credit);

(d) physics (1.0 units of credit).

(4) Social Studies (3.0 units of credit):

(a) Geography for Life (0.5 units of credit);

(b) World Civilizations (0.5 units of credit);

(c) U.S. history (1.0 units of credit);

(d) U.S. Government and Citizenship (0.5 units of Credit);

(e) elective social studies class (0.5 units of

(5) The Arts (1.5 units of credit from any of the following performance areas):

(a) visual arts;

(b) music;

(c) dance;

(d) theatre;

(6) Health education (0.5 units of credit)

(7) Physical education (1.5 units of credit):

(a) participation skills (0.5 units of credit);

(b) Fitness for Life (0.5 units of credit);

(c) individualized lifetime activities (0.5 units of credit) or team sport/athletic participation (maximum of 0.5 units of credit with school approval).

(8) Applied technology education (1.0 units of credit);

(a) agriculture;

(b) business;

(c) family and consumer sciences;

(d) technology education;

(h) trade and technical education.

(9) Educational technology:

(a) computer Technology (0.5 units of credit for the class by this specific name only); or

(b) successful completion of state-approved competency examination (no credit, but satisfies the Core requirement).

(10) Library media skills integrated into the curriculum;

(11) Board-approved CRT's shall be used to assess student mastery of the following subjects:

(a) reading;

(b) language arts through grade 11;

(c) mathematics as defined under R277-700-6D(2);

(d) science as defined under R277-700-6D(3); and

(e) effectiveness of written expression.

E. Students shall participate in the Utah Basic Skills Competency Test, as defined under R277-700-1O.

F. Students with disabilities served by special education programs may have changes made to graduation requirements through individual IEPs to meet unique educational needs. A student's IEP shall document the nature and extent of modifications, substitutions or exemptions made to accommodate a student with disabilities.

R277-700.7. Student Mastery and Assessment of Core Curriculum Standards and Objectives.

A. Student mastery of the Core Curriculum at all levels is the responsibility of local boards of education.

B. Provisions for remediation of secondary students who do not achieve mastery is the responsibility of local boards of education under Section 53A-13-104.

C. Students who are found to be deficient in basic skills through U-PASS shall receive remedial assistance according to provisions of Section 53A-1-606(1).

D. If parents object to portions of courses or courses in their entirety under provisions of law (Section 53A-13-101.2) and rule (R277-105), students and parents shall be responsible for the mastery of Core objectives to the satisfaction of the school prior to promotion to the next course or grade level.

E. Students with Disabilities:

(1) All students with disabilities served by special education programs shall demonstrate mastery of the Core Curriculum.

(2) If a student's disabling condition precludes the successful demonstration of mastery, the student's IEP team, on a case-by-case basis, may provide accommodations for or modify the mastery demonstration to accommodate the student's disability.

F. Students may demonstrate competency to satisfy course requirements consistent with R277-705-3.

G. All Utah public school students shall participate in state-mandated assessments, as required by law.

KEY: curricula
March 5, 2002

Art X Sec 3
53A-1-402(1)(b
53A-1-402.6
53A-1-401(3

Educational Technology Core Curriculum
Grades 3-5

Course Description
The Educational Technology Core standards and objectives are written to equip students with technology knowledge and skills necessary to successfully live, learn, and work in the 21st century. The objectives are intended not only to teach marketable technology skills but also to apply technology across the curriculum. Consequently, this core should not be taught in isolation of other core content but integrated throughout. Technology is integrated when "it is used in a seamless manner to support and extend curriculum objectives and to engage students in meaningful learning. It is not something one does separately; it is part of the daily activities taking place in the classroom." (Dias, Laurie B., Integrating Technology, Learning & Leading with Technology, November 1999, p. 11)

This curriculum is written with the realization that significant effort may be necessary to fulfill the objectives. Although Utah has been aggressive in building a statewide infrastructure to improve student achievement through integration of technology into the teaching and learning process, not all schools will have sufficient hardware and software in their classrooms or adequately trained teachers. It is expected that schools will plan and initiate steps to reach a position where these standards and objectives can be fully implemented. Inservice training is essential to fully prepare teachers to competently convey the entire curriculum.

This core revision marks a departure from the previous core in two important ways. First, the name of the core changed from information technology to educational technology. Second, the core is divided around grade bands rather than individual grades. The K-2 band, though strongly recommended, is optional. The needed curricular emphasis in these early grades must be on literacy and numeracy.

It is recommended that keyboarding first be taught as a concentrated unit in third grade and reviewed in each succeeding grade to allow students to achieve a high degree of proficiency. Keyboarding should be taught through direct instruction as opposed to a reliance on any commercial software package. Expensive multimedia computers need not be used for this instruction. Third grade teachers should work with secondary applied technology teachers to ensure appropriate instruction.

The standards and performance indicators that follow are adapted from the National Educational Technology Standards for Students. These were based on input and feedback from educational technology experts as well as parents, teachers, and curriculum experts. In addition they reflect information collected from the professional literature and local, state, and national documents.

Technology Foundation Standards for Students K-12

The technology foundation standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. These categories provide a framework for linking performance indicators to the standards. Teachers can use these standards and performance indicators as guidelines for planning technology-based activities in which students achieve success in learning, communication, and life skills.

1. **Basic operations and concepts**
   a. Students demonstrate a sound understanding of the nature and operation of technology systems.
   b. Students are proficient in the use of technology.
2. **Social, ethical, and human issues**
   a. Students understand the ethical, cultural, and societal issues related to technology.
   b. Students practice responsible use of technology systems, information, and software.
   c. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
3. **Technology productivity tools**
   a. Students use technology tools to enhance learning, increase productivity, and promote creativity.
   b. Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.
4. **Technology communications tools**
   a. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
   b. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
5. **Technology research tools**
   a. Students use technology to locate, evaluate, and collect information from a variety of sources.
   b. Students use technology tools to process data and report results.
   c. Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.
6. **Technology problem-solving and decision-making tools**
   a. Students use technology resources for solving problems and making informed decisions.
   b. Students employ technology in the development of strategies for solving problems in the real world.

Performance Indicators, Grades 3-5

It is recommended that in addition to the standards and performance indicators, that keyboarding first be taught as a concentrated unit in third grade and reviewed in each succeeding grade to allow students to achieve a high degree of proficiency (See Appendix B). All students should have opportunities to demonstrate the following performances as a consequence of learning about other core content. Students will be assessed during the spring of their 5th grade year. The assessment will include a keyboarding skill test, a technology literacy self-assessment, and the inclusion of at least two pieces of student work in an electronic portfolio. Numbers in parentheses following each performance indicator refer to the standards category to which the performance is linked.

The *categories* are:

1. Basic operations and concepts
2. Social, ethical, and human issues
3. Technology productivity tools
4. Technology communications tools
5. Technology research tools
6. Technology problem-solving and decision-making tools

Prior to completion of Grade 5, students will:

Standard 1

Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively. (1)

Standard 2

Discuss common uses of technology in daily life and advantages and disadvantages those uses provide. (1, 2)

Standard 3

Discuss basic issues related to responsible use of technology and information; and describe personal consequences of inappropriate use. (2)

Standard 4

Use general purpose productivity tools and peripherals to support personal productivity, to remediate skill deficits, and to facilitate learning throughout the curriculum. (3)

Standard 5

Use technology tools (e.g., multimedia authoring, presentation, web tools, digital cameras, scanners) for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom. (3, 4)

Standard 6

Use telecommunications efficiently and effectively to access remote information and communicate with others in support of direct and independent learning and for pursuit of personal interests. (4)

Standard 7

Use telecommunications and on-line resources (e.g., email, online discussions, web environments) to participate in collaborative problem-solving activities to develop solutions or products for audiences inside and outside the classroom. (4, 5)

Standard 8

Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem-solving, self-directed learning, and extended learning activities. (5, 6)

Standard 9

Determine when technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems. (5, 6)

Standard 10

Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources. (6)

Educational Technology Core Curriculum
Grades 6-8

Course Description

The Educational Technology Core standards and objectives are written to equip students with technology knowledge and skills necessary to successfully live, learn, and work in the 21st century. The objectives are intended not only to teach marketable technology skills but also to apply technology across the curriculum. Consequently, this core should not be taught in isolation of other core content but integrated throughout. Technology is integrated when "it is used in a seamless manner to support and extend curriculum objectives and to engage students in meaningful learning. It is not something one does separately; it is part of the daily activities taking place in the classroom." (Dias, Laurie B., Integrating Technology, Learning & Leading with Technology, November 1999, p. 11)

This curriculum is written with the realization that significant effort may be necessary to fulfill the objectives. Although Utah has been aggressive in building a statewide infrastructure to improve student achievement through integration of technology into the teaching and learning process, not all schools will have sufficient hardware and software in their classrooms or adequately trained teachers. It is expected that schools will plan and initiate steps to reach a position where these standards and objectives can be fully implemented. Inservice training is essential to fully prepare teachers to competently convey the entire curriculum.

This core revision marks a departure from the previous core in two important ways. First, the name of the core changed from information technology to educational technology. Second, the core is divided around grade bands rather than individual grades. The K-2 band, though strongly recommended, is optional. The needed curricular emphasis in these early grades must be on literacy and numeracy.

It is recommended that keyboarding first be taught as a concentrated unit in third grade and reviewed in each succeeding grade to allow students to achieve a high degree of proficiency. Keyboarding should be taught through direct instruction as opposed to a reliance on any commercial software package. Expensive multimedia computers need not be used for this instruction. Third grade teachers should work with secondary applied technology teachers to ensure appropriate instruction.

The standards and performance indicators that follow are adapted from the National Educational Technology Standards for Students. These were based on input and feedback from educational technology experts as well as parents, teachers, and curriculum experts. In addition they reflect information collected from the professional literature and local, state, and national documents.

Technology Foundation Standards for Students K-12

The technology foundation standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. These categories provide a framework for linking performance indicators to the standards. Teachers can use these standards and performance indicators as guidelines for planning technology-based activities in which students achieve success in learning, communication, and life skills.

1. **Basic operations and concepts**
   a. Students demonstrate a sound understanding of the nature and operation of technology systems.
   b. Students are proficient in the use of technology.
2. **Social, ethical, and human issues**
   a. Students understand the ethical, cultural, and societal issues related to technology.
   b. Students practice responsible use of technology systems, information, and software.
   c. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
3. **Technology productivity tools**
   a. Students use technology tools to enhance learning, increase productivity, and promote creativity.
   b. Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.
4. **Technology communications tools**
   a. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
   b. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
5. **Technology research tools**
   a. Students use technology to locate, evaluate, and collect information from a variety of sources.
   b. Students use technology tools to process data and report results.
   c. Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.
6. **Technology problem-solving and decision-making tools**
   a. Students use technology resources for solving problems and making informed decisions.
   b. Students employ technology in the development of strategies for solving problems in the real world.

Performance Indicators, Grades 6-8
All students should have opportunities to demonstrate the following performances as a consequence of learning about other core content. Students will be assessed during the spring of their 7th or 8th grade year. The assessment will include a keyboarding skill test, a technology literacy self-assessment, and the inclusion of at least two pieces of student work in an electronic portfolio. Numbers in parentheses following each performance indicator refer to the standards category to which the performance is linked.

The *categories* are:
1. Basic operations and concepts
2. Social, ethical, and human issues
3. Technology productivity tools
4. Technology communications tools
5. Technology research tools
6. Technology problem-solving and decision-making tools

Prior to completion of Grade 8 students will:

Standard 1

Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use. (1)

Standard 2

Demonstrate knowledge of current changes in information technologies and the effect those changes have on the workplace and society. (2)

Standard 3

Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse. (2)

Standard 4

Use content-specific tools, software and simulations (e.g., environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research. (3, 5)

Standard 5

Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration, and learning throughout the curriculum. (3, 6)

Standard 6

Design, develop, publish and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom. (4,5,6)

Standard 7

Collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information, and to develop solutions or products for audiences inside and outside the classroom. (4, 5)

Standard 8

Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems. (5, 6)

Standard 9

Demonstrate an understanding of concepts underlying hardware, software, and connectivity, and practical applications to learning and problem solving. (1, 6)

Standard 10

Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. (2, 5, 6)

Educational Technology Core Curriculum
Grades 9-12

Course Description

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Technology Foundation Standards for Students K-12

The technology foundation standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students. These categories provide a framework for linking performance indicators to the standards. Teachers can use these standards and performance indicators as guidelines for planning technology-based activities in which students achieve success in learning, communication, and life skills.

1. **Basic operations and concepts**
   a. Students demonstrate a sound understanding of the nature and operation of technology systems.
   b. Students are proficient in the use of technology.
2. **Social, ethical, and human issues**
   a. Students understand the ethical, cultural, and societal issues related to technology.
   b. Students practice responsible use of technology systems, information, and software.
   c. Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
3. **Technology productivity tools**
   a. Students use technology tools to enhance learning, increase productivity, and promote creativity.
   b. Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.
4. **Technology communications tools**
   a. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
   b. Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
5. **Technology research tools**
   a. Students use technology to locate, evaluate, and collect information from a variety of sources.
   b. Students use technology tools to process data and report results.
   c. Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.
6. **Technology problem-solving and decision-making tools**
   a. Students use technology resources for solving problems and making informed decisions.
   b. Students employ technology in the development of strategies for solving problems in the real world.

Performance Indicators, Grades 9-12
All students should have opportunities to demonstrate the following performances as a consequence of learning about other core content. Students will be assessed during the spring of their 12th grade year. The assessment will include a keyboarding skill test, a technology literacy self-assessment, and the inclusion of at least two pieces of student work in an electronic portfolio. Numbers in parentheses following each performance indicator refer to the standards category to which the performance is linked.
The *categories* are:
1. Basic operations and concepts
2. Social, ethical, and human issues
3. Technology productivity tools
4. Technology communications tools
5. Technology research tools
6. Technology problem-solving and decision-making tools

Prior to completion of Grade 12, students will:

Standard 1

Identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning, and workplace needs. (2)

Standard 2

Make informed choices among technology systems, resources, and services. (1, 2)

Standard 3

Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole. (2)

Standard 4

Demonstrate and advocate legal and ethical behaviors among peers, family, and community regarding the use of technology and information. (2)

Standard 5

Use technology tools and resources for managing and communicating personal/professional information (e.g., finances, schedules, addresses, purchases, correspondence). (3, 4)

Standard 6

Evaluate technology-based options, including distance and distributed education, for lifelong learning. (5)

Standard 7

Routinely and efficiently use on-line information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6)

Standard 8

Select and apply technology tools for research, information analysis, problem-solving, and decision-making in content learning. (4, 5)

Standard 9

Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, 6)

Standard 10

Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6)